Supplementary information

**Association of telomere length with chronic exposure to ionizing radiation among inhabitants of natural high background radiation areas of Ramsar, Iran**

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### Table S1. individual characteristics and measured relative telomere lengths of the study participants

| **Sample's ID** | **Group** | **Subgroup** | **Sex** | **Age Range (years)** | **BMI (kg/m2)** | **RTL (T/S ratio)** |
| --- | --- | --- | --- | --- | --- | --- |
| R83 | HBRA | Moderately exposed | F | 15-30 | 21.36 | 3.00 |
| R27 | HBRA | Moderately exposed | F | 15-30 | 17.78 | 0.95 |
| R28 | HBRA | Moderately exposed | F | 15-30 | 28.63 | 1.00 |
| R1 | HBRA | Highly exposed | F | 15-30 | 22.04 | 0.61 |
| R2 | HBRA | Highly exposed | M | 15-30 | 20.50 | 0.41 |
| R84 | HBRA | Moderately exposed | F | 15-30 | 30.47 | 1.82 |
| R54 | HBRA | Highly exposed | F | 15-30 | 24.82 | 1.13 |
| R85 | HBRA | Moderately exposed | F | 15-30 | 21.45 | 2.86 |
| R3 | HBRA | Highly exposed | M | 15-30 | 20.20 | 0.54 |
| R4 | HBRA | Highly exposed | F | 15-30 | 22.49 | 0.62 |
| R5 | HBRA | Moderately exposed | M | 15-30 | 26.45 | 0.45 |
| R29 | HBRA | Highly exposed | F | 15-30 | 28.91 | 0.83 |
| R6 | HBRA | Highly exposed | F | 15-30 | 21.16 | 0.40 |
| R7 | HBRA | Highly exposed | F | 15-30 | 28.04 | 0.21 |
| R30 | HBRA | Highly exposed | F | 15-30 | 23.59 | 0.96 |
| R31 | HBRA | Highly exposed | M | 31-40 | 28.09 | 0.84 |
| R55 | HBRA | Highly exposed | F | 31-40 | 26.37 | 1.47 |
| R56 | HBRA | Highly exposed | F | 31-40 | 23.53 | 1.46 |
| R86 | HBRA | Highly exposed | F | 31-40 | 22.49 | 1.90 |
| R57 | HBRA | Highly exposed | F | 31-40 | 22.96 | 1.31 |
| R58 | HBRA | Highly exposed | M | 31-40 | 26.30 | 1.22 |
| R87 | HBRA | Moderately exposed | F | 31-40 | 30.36 | 1.81 |
| R8 | HBRA | Highly exposed | M | 31-40 | 37.24 | 0.14 |
| R88 | HBRA | Highly exposed | F | 31-40 | 25.39 | 2.87 |
| R89 | HBRA | Highly exposed | F | 31-40 | 25.10 | 2.56 |
| R59 | HBRA | Highly exposed | F | 41-50 | 27.55 | 1.48 |
| R60 | HBRA | Moderately exposed | F | 41-50 | 32.46 | 1.16 |
| R61 | HBRA | Moderately exposed | M | 41-50 | 35.76 | 1.49 |
| R90 | HBRA | Moderately exposed | M | 41-50 | 26.45 | 2.41 |
| R62 | HBRA | Highly exposed | F | 41-50 | 25.71 | 1.28 |
| R63 | HBRA | Highly exposed | F | 41-50 | 32.81 | 1.45 |
| R91 | HBRA | Moderately exposed | F | 41-50 | 24.44 | 2.17 |
| R64 | HBRA | Highly exposed | M | 41-50 | 24.69 | 1.42 |
| R92 | HBRA | Highly exposed | F | 41-50 | 22.15 | 2.13 |
| R32 | HBRA | Highly exposed | F | 41-50 | 25.71 | 0.95 |
| R33 | HBRA | Highly exposed | M | 41-50 | 21.15 | 0.76 |
| R9 | HBRA | Highly exposed | F | 41-50 | 28.52 | 0.36 |
| R65 | HBRA | Highly exposed | F | 41-50 | 21.80 | 1.32 |
| R66 | HBRA | Highly exposed | F | 41-50 | 29.30 | 1.12 |
| R34 | HBRA | Moderately exposed | F | 41-50 | 26.37 | 0.91 |
| R35 | HBRA | Moderately exposed | F | 41-50 | 28.91 | 0.90 |
| R93 | HBRA | Highly exposed | F | 41-50 | 34.00 | 2.52 |
| R36 | HBRA | Highly exposed | F | 41-50 | 36.36 | 0.92 |
| R37 | HBRA | Highly exposed | M | 41-50 | 26.83 | 0.72 |
| R67 | HBRA | Moderately exposed | F | 41-50 | 31.25 | 1.40 |
| R10 | HBRA | Highly exposed | M | 41-50 | 25.51 | 0.55 |
| R38 | HBRA | Highly exposed | F | 51-60 | 22.22 | 0.90 |
| R94 | HBRA | Moderately exposed | F | 51-60 | 26.42 | 1.62 |
| R11 | HBRA | Highly exposed | F | 51-60 | 39.09 | 0.46 |
| R68 | HBRA | Highly exposed | F | 51-60 | 28.34 | 1.36 |
| R12 | HBRA | Highly exposed | M | 51-60 | 23.53 | 0.62 |
| R13 | HBRA | Highly exposed | M | 51-60 | 21.60 | 0.30 |
| R14 | HBRA | Highly exposed | F | 51-60 | 24.98 | 0.47 |
| R39 | HBRA | Highly exposed | F | 51-60 | 39.33 | 0.93 |
| R69 | HBRA | Highly exposed | F | 51-60 | 22.21 | 1.51 |
| R40 | HBRA | Highly exposed | F | 51-60 | 29.30 | 0.94 |
| R70 | HBRA | Moderately exposed | M | 51-60 | 22.46 | 1.60 |
| R15 | HBRA | Highly exposed | F | 51-60 | 27.56 | 0.31 |
| R16 | HBRA | Highly exposed | M | 51-60 | 23.15 | 0.22 |
| R17 | HBRA | Highly exposed | M | 51-60 | 22.49 | 0.38 |
| R71 | HBRA | Highly exposed | M | 51-60 | 24.97 | 1.49 |
| R72 | HBRA | Highly exposed | M | 51-60 | 23.15 | 1.12 |
| R41 | HBRA | Highly exposed | F | 51-60 | 26.37 | 0.76 |
| R42 | HBRA | Moderately exposed | F | 51-60 | 25.56 | 0.81 |
| R73 | HBRA | Highly exposed | F | 51-60 | 28.89 | 1.30 |
| R74 | HBRA | Highly exposed | F | 51-60 | 27.55 | 1.60 |
| R75 | HBRA | Highly exposed | F | 51-60 | 27.56 | 1.32 |
| R76 | HBRA | Highly exposed | F | 51-60 | 26.81 | 1.36 |
| R95 | HBRA | Highly exposed | F | 51-60 | 32.89 | 2.83 |
| R43 | HBRA | Highly exposed | F | 51-60 | 27.06 | 0.86 |
| R44 | HBRA | Highly exposed | F | 51-60 | 22.22 | 0.90 |
| R45 | HBRA | Highly exposed | F | 51-60 | 38.29 | 0.82 |
| R46 | HBRA | Highly exposed | F | 51-60 | 26.67 | 1.05 |
| R18 | HBRA | Highly exposed | F | 61-70 | 38.28 | 0.23 |
| R77 | HBRA | Highly exposed | M | 61-70 | 27.78 | 1.34 |
| R47 | HBRA | Highly exposed | F | 61-70 | 29.02 | 1.04 |
| R48 | HBRA | Moderately exposed | F | 61-70 | 22.49 | 1.02 |
| R19 | HBRA | Highly exposed | M | 61-70 | 24.49 | 0.57 |
| R49 | HBRA | Highly exposed | F | 61-70 | 28.91 | 0.99 |
| R78 | HBRA | Moderately exposed | F | 61-70 | 34.63 | 1.53 |
| R96 | HBRA | Moderately exposed | F | 61-70 | 24.97 | 2.14 |
| R20 | HBRA | Highly exposed | F | 61-70 | 21.48 | 0.66 |
| R97 | HBRA | Highly exposed | M | 61-70 | 27.68 | 2.22 |
| R21 | HBRA | Highly exposed | M | 61-70 | 20.01 | 0.53 |
| R22 | HBRA | Highly exposed | F | 61-70 | 36.14 | 0.20 |
| R98 | HBRA | Highly exposed | M | 61-70 | 23.88 | 2.38 |
| R79 | HBRA | Highly exposed | M | 61-70 | 22.79 | 1.06 |
| R99 | HBRA | Highly exposed | M | 61-70 | 24.49 | 2.96 |
| R50 | HBRA | Highly exposed | F | 61-70 | 27.34 | 0.70 |
| R100 | HBRA | Highly exposed | F | 61-70 | 29.41 | 2.69 |
| R23 | HBRA | Highly exposed | F | 61-70 | 27.34 | 0.49 |
| R24 | HBRA | Highly exposed | F | 61-70 | 19.53 | 0.54 |
| R101 | HBRA | Moderately exposed | F | 71-85 | 23.51 | 2.55 |
| R102 | HBRA | Moderately exposed | M | 71-85 | 24.98 | 1.75 |
| R25 | HBRA | Moderately exposed | F | 71-85 | 26.30 | 0.33 |
| R51 | HBRA | Highly exposed | M | 71-85 | 26.30 | 1.00 |
| R80 | HBRA | Highly exposed | M | 71-85 | 19.59 | 1.19 |
| R103 | HBRA | Highly exposed | F | 71-85 | 22.22 | 1.82 |
| R104 | HBRA | Moderately exposed | F | 71-85 | 24.98 | 2.49 |
| R52 | HBRA | Highly exposed | F | 71-85 | 25.00 | 0.77 |
| R81 | HBRA | Highly exposed | F | 71-85 | 20.94 | 1.39 |
| R53 | HBRA | Highly exposed | M | 71-85 | 30.22 | 1.05 |
| R82 | HBRA | Highly exposed | M | 71-85 | 25.95 | 1.20 |
| R26 | HBRA | Moderately exposed | M | 71-85 | 38.46 | 0.45 |
| A1 | NBRA | Control | F | 15-30 | 22.48 | 0.48 |
| A52 | NBRA | Control | F | 15-30 | 22.32 | 1.44 |
| A77 | NBRA | Control | F | 15-30 | 21.83 | 1.70 |
| A76 | NBRA | Control | F | 15-30 | 24.46 | 1.94 |
| A78 | NBRA | Control | F | 15-30 | 25.65 | 2.90 |
| A2 | NBRA | Control | M | 15-30 | 25.25 | 0.66 |
| A53 | NBRA | Control | F | 15-30 | 25.15 | 1.49 |
| A79 | NBRA | Control | F | 15-30 | 23.59 | 1.96 |
| A80 | NBRA | Control | M | 15-30 | 26.23 | 1.64 |
| A54 | NBRA | Control | F | 15-30 | 24.84 | 1.18 |
| A55 | NBRA | Control | F | 15-30 | 22.58 | 1.21 |
| A56 | NBRA | Control | F | 15-30 | 24.38 | 1.54 |
| A3 | NBRA | Control | M | 15-30 | 26.84 | 0.25 |
| A27 | NBRA | Control | F | 15-30 | 29.41 | 0.80 |
| A28 | NBRA | Control | M | 15-30 | 29.39 | 0.94 |
| A29 | NBRA | Control | M | 31-40 | 26.88 | 0.82 |
| A57 | NBRA | Control | F | 31-40 | 24.69 | 1.56 |
| A81 | NBRA | Control | F | 31-40 | 27.04 | 2.40 |
| A82 | NBRA | Control | F | 31-40 | 25.56 | 1.87 |
| A83 | NBRA | Control | F | 31-40 | 22.76 | 1.68 |
| A30 | NBRA | Control | M | 31-40 | 27.16 | 0.84 |
| A58 | NBRA | Control | F | 31-40 | 22.68 | 1.50 |
| A31 | NBRA | Control | M | 31-40 | 25.51 | 0.94 |
| A59 | NBRA | Control | M | 31-40 | 27.44 | 1.56 |
| A4 | NBRA | Control | F | 31-40 | 24.17 | 0.34 |
| A5 | NBRA | Control | F | 41-50 | 23.59 | 0.19 |
| A32 | NBRA | Control | F | 41-50 | 28.52 | 0.98 |
| A60 | NBRA | Control | M | 41-50 | 21.63 | 1.18 |
| A6 | NBRA | Control | F | 41-50 | 28.01 | 0.53 |
| A7 | NBRA | Control | F | 41-50 | 30.86 | 0.55 |
| A8 | NBRA | Control | F | 41-50 | 25.46 | 0.29 |
| A61 | NBRA | Control | M | 41-50 | 22.15 | 1.40 |
| A62 | NBRA | Control | F | 41-50 | 28.88 | 1.30 |
| A63 | NBRA | Control | M | 41-50 | 27.44 | 1.10 |
| A9 | NBRA | Control | M | 41-50 | 24.76 | 0.38 |
| A33 | NBRA | Control | F | 41-50 | 27.06 | 1.04 |
| A64 | NBRA | Control | F | 41-50 | 27.01 | 1.26 |
| A65 | NBRA | Control | F | 41-50 | 24.22 | 1.06 |
| A84 | NBRA | Control | M | 41-50 | 27.64 | 1.66 |
| A85 | NBRA | Control | F | 41-50 | 25.63 | 2.11 |
| A10 | NBRA | Control | F | 41-50 | 25.91 | 0.56 |
| A34 | NBRA | Control | M | 41-50 | 23.36 | 1.02 |
| A66 | NBRA | Control | F | 41-50 | 21.80 | 1.08 |
| A35 | NBRA | Control | F | 41-50 | 25.71 | 1.02 |
| A67 | NBRA | Control | M | 41-50 | 26.49 | 1.39 |
| A86 | NBRA | Control | M | 41-50 | 25.39 | 1.70 |
| A11 | NBRA | Control | F | 51-60 | 25.51 | 0.55 |
| A12 | NBRA | Control | F | 51-60 | 30.04 | 0.45 |
| A87 | NBRA | Control | F | 51-60 | 25.51 | 2.30 |
| A88 | NBRA | Control | F | 51-60 | 36.44 | 2.65 |
| A89 | NBRA | Control | F | 51-60 | 24.44 | 2.95 |
| A13 | NBRA | Control | F | 51-60 | 23.03 | 0.68 |
| A68 | NBRA | Control | F | 51-60 | 29.43 | 1.38 |
| A36 | NBRA | Control | F | 51-60 | 21.80 | 0.80 |
| A14 | NBRA | Control | F | 51-60 | 24.14 | 0.31 |
| A37 | NBRA | Control | F | 51-60 | 30.02 | 0.93 |
| A90 | NBRA | Control | F | 51-60 | 25.71 | 2.26 |
| A91 | NBRA | Control | F | 51-60 | 22.58 | 1.83 |
| A15 | NBRA | Control | M | 51-60 | 28.91 | 0.59 |
| A38 | NBRA | Control | M | 51-60 | 22.13 | 0.80 |
| A92 | NBRA | Control | M | 51-60 | 22.84 | 2.92 |
| A16 | NBRA | Control | M | 51-60 | 23.46 | 0.52 |
| A39 | NBRA | Control | M | 51-60 | 23.77 | 1.03 |
| A40 | NBRA | Control | F | 51-60 | 28.00 | 0.77 |
| A41 | NBRA | Control | F | 51-60 | 25.91 | 0.93 |
| A93 | NBRA | Control | F | 51-60 | 25.61 | 1.93 |
| A42 | NBRA | Control | F | 51-60 | 26.81 | 0.99 |
| A43 | NBRA | Control | M | 51-60 | 27.04 | 0.88 |
| A69 | NBRA | Control | M | 51-60 | 24.51 | 1.45 |
| A94 | NBRA | Control | M | 51-60 | 24.00 | 2.07 |
| A70 | NBRA | Control | M | 51-60 | 22.77 | 1.39 |
| A71 | NBRA | Control | F | 51-60 | 21.33 | 1.39 |
| A44 | NBRA | Control | F | 51-60 | 29.14 | 0.70 |
| A45 | NBRA | Control | F | 61-70 | 27.56 | 0.99 |
| A46 | NBRA | Control | M | 61-70 | 24.82 | 1.03 |
| A95 | NBRA | Control | F | 61-70 | 25.78 | 1.77 |
| A17 | NBRA | Control | M | 61-70 | 27.39 | 0.51 |
| A47 | NBRA | Control | F | 61-70 | 26.14 | 1.04 |
| A96 | NBRA | Control | M | 61-70 | 25.50 | 2.08 |
| A97 | NBRA | Control | F | 61-70 | 25.64 | 1.86 |
| A98 | NBRA | Control | F | 61-70 | 30.48 | 1.86 |
| A99 | NBRA | Control | F | 61-70 | 24.61 | 2.09 |
| A18 | NBRA | Control | M | 61-70 | 26.91 | 0.49 |
| A19 | NBRA | Control | F | 61-70 | 21.48 | 0.44 |
| A48 | NBRA | Control | F | 61-70 | 25.92 | 0.93 |
| A20 | NBRA | Control | M | 61-70 | 26.56 | 0.55 |
| A21 | NBRA | Control | M | 61-70 | 23.88 | 0.46 |
| A22 | NBRA | Control | F | 61-70 | 27.47 | 0.43 |
| A23 | NBRA | Control | F | 61-70 | 26.91 | 0.62 |
| A49 | NBRA | Control | M | 61-70 | 25.00 | 0.82 |
| A100 | NBRA | Control | M | 61-70 | 26.70 | 2.12 |
| A101 | NBRA | Control | M | 61-70 | 23.05 | 1.93 |
| A50 | NBRA | Control | M | 71-85 | 25.61 | 0.84 |
| A72 | NBRA | Control | M | 71-85 | 28.52 | 1.27 |
| A73 | NBRA | Control | F | 71-85 | 24.61 | 1.05 |
| A24 | NBRA | Control | M | 71-85 | 25.71 | 0.61 |
| A51 | NBRA | Control | F | 71-85 | 26.08 | 0.70 |
| A25 | NBRA | Control | M | 71-85 | 29.07 | 0.58 |
| A74 | NBRA | Control | F | 71-85 | 24.00 | 1.53 |
| A102 | NBRA | Control | F | 71-85 | 27.11 | 2.35 |
| A103 | NBRA | Control | F | 71-85 | 24.39 | 1.75 |
| A26 | NBRA | Control | M | 71-85 | 24.98 | 0.20 |
| A104 | NBRA | Control | M | 71-85 | 27.27 | 2.10 |
| A75 | NBRA | Control | F | 71-85 | 25.78 | 1.18 |

Abbreviations: NBRA, normal background radiation area; HBRA, high background radiation area; F, female; M, male; BMI, body mass index; RTL, relative telomere length.